

Quality of life in young, professionally active men undergoing on-pump coronary artery bypass grafting – short-term follow-up results

Łukasz J. Krzych¹, Anna Woźnica¹, Adam Pawlak¹, Janusz Skarysz¹, Zbigniew Eysymontt², Beata Chromańska-Matera², Irena Krupka-Matuszczyk¹, Andrzej Bochenek¹, Marek Cisowski¹

¹ Silesian Medical University, Katowice, Poland

² Silesian Centre of Rehabilitation, Ustron, Poland

Abstract

Background: The impact of coronary artery bypass grafting (CABG) on the quality of life (QoL) is one of the important measures of the efficacy of the procedure. This issue in young, professionally active male patients has not been extensively studied.

Aim: To assess QoL before and after on-pump CABG, and before and after cardiac rehabilitation in young men with low operative risk.

Methods: The study group comprised 50 men aged 54.4 ± 5.6 years who were professionally active before the surgery. The QoL was assessed on the basis of the MacNew questionnaire (in points). We analysed QoL changes and effects of basic demographic and peri-operative data on QoL during a short-term follow-up.

Results: All components of QoL deteriorated shortly after CABG: emotional – from 4.97 ± 0.96 to 4.66 ± 1.0 ($p = 0.03$); physical – from 4.49 ± 1.1 to 4.2 ± 1.2 ($p = 0.02$); and social – from 4.68 ± 1.0 to 4.47 ± 1.1 ($p = 0.1$). Pre-operative physical and social QoL positively correlated with age ($r = 0.45$ and $r = 0.37$, respectively) and left ventricular ejection fraction (LVEF) ($r = 0.49$ and $r = 0.48$, respectively). However, there was a negative impact of history of myocardial infarction on physical QoL ($p < 0.05$). A negative influence of cardiopulmonary bypass time ($r = -0.45$) and cross-aortic clamp time ($r = -0.36$) on physical QoL was also noted. The QoL values were also influenced by class of angina symptoms ($R = -0.33 \div -0.42$), total drainage ($r = -0.11 \div -0.34$) and quantity of grafts ($R = -0.35 \div -0.42$). During rehabilitation, QoL significantly improved: emotional – from 5.29 ± 0.92 to 5.96 ± 0.9 ($p = 0.01$); physical – from 4.66 ± 1.1 to 5.42 ± 1.2 ($p < 0.01$); and social – from 4.69 ± 1.2 to 5.65 ± 1.1 ($p < 0.01$). The QoL during rehabilitation was correlated with baseline peri-operative risk (for logistic EuroSCORE algorithm $r = -0.21 \div -0.31$ and for EuroSCORE $R = -0.47 \div -0.89$). Significant determinants of some components of QoL were also LVEF ($r = 0.26 \div 0.47$), morphological blood parameters ($r = 0.37 \div 0.43$), baseline CCS class ($R = 0.31 \div 0.58$), age ($r = -0.41 \div -0.83$), and extent of surgery defined by cardiopulmonary bypass time, cross-aortic clamp duration and total drainage.

Conclusions: Quality of life in young, professionally active men significantly deteriorates a few days after on-pump CABG but systematically improves during the next weeks, particularly after rehabilitation. Pre-operative QoL correlates positively with age and LVEF, and negatively with a history of myocardial infarction. Age, pre-operative risk, angina symptoms and the extent of surgery have negative effects on physical QoL after CABG during short-term observation.

Key words: coronary artery bypass grafting, quality of life, operative risk

Kardiologia Pol 2009; 67: 1078-1085

Introduction

The risk associated with coronary artery bypass grafting (CABG) is currently considered by patients and healthcare professionals not only in terms of safety of the procedure and the possibility of complications occurring, its success rate in reduction of angina symptoms or durability of the achieved effect, but also – more and more frequently – in the context of length of hospital stay, discomfort associated with pain, the need for early rehabilitation and

improvement of quality of life (QoL) [1]. Importantly, periprocedural QoL in patients undergoing cardiosurgical procedures is being more and more frequently used as a parameter assessing the efficacy of treatment as an additional end point.

The effects of CABG on QoL in prospective observational studies are quite well known. It was demonstrated that using cardiopulmonary bypass does not have an important influence on postprocedural QoL or

Address for correspondence:

Łukasz J. Krzych MD, PhD, Śląski Uniwersytet Medyczny, ul. Ziołowa 47, 40-635 Katowice, tel.: +48 32 359 86 11, +48 32 252 70 66, fax: +48 32 252 80 10, e-mail: l.krzych@wp.pl

Received: 20 February 2009. **Accepted:** 01 July 2009.

its influence is marginal [2-4]. On the other hand, significant predictors of QoL are factors such as age or the presence of co-morbidities [3, 5-10]. Also gender is important [11-13].

The attention of investigators was focused mainly on the assessment of QoL in patients with co-morbidities, with high periprocedural risk and in older populations [6, 14-20]. Assessment of the results of surgery is usually performed a few or several months after the procedure [3, 4, 7, 16-18, 21-24]. So far, not much attention has been paid to the evaluation of QoL in young patients, especially males, with no co-morbidities, who are professionally active. These patients usually return to active life, including professional activity, shortly after surgery, after intensive early post-hospital rehabilitation.

On the basis of these considerations, we planned a prospective observational study. Its aim was to assess postprocedural QoL in young male patients, with low preprocedural risk, who underwent CABG with cardiopulmonary bypass. The aim of the current analysis, which is the first part of the project, is to demonstrate baseline characteristics of recruited patients and the analysis of QoL in the periprocedural period (before surgery and directly before discharge) and after 6-10 weeks after surgery (at the beginning and at the end of the rehabilitation programme).

Methods

One hundred and twenty consecutive males were invited to participate in the project. Approval from the local ethics committee was obtained and aims as well as protocol of the study were explained to patients. The inclusion criteria were: age < 65 years, professional activity, angiographically proven multivessel coronary artery disease, and qualification for elective CABG. Exclusion criteria were as follows: no informed consent given ($n = 20$), high periprocedural risk (EuroScore ≥ 6 points, $n = 20$), presence of significant co-morbidities (i.e. chronic obstructive pulmonary disease of severity $> 1^\circ$, renal failure, hepatic failure, lower extremity peripheral artery disease, significant stenosis of carotid arteries, arrhythmias, conduction disturbances, haemodynamically significant valvular heart disease, unstable angina) ($n = 26$) and inability to complete the questionnaire on his/her own ($n = 4$). Therefore, after considering exclusion criteria, 50 males, who underwent CABG with cardiopulmonary bypass between April 2008 and November 2008, were included in the study. In all patients standard procedures of anaesthesia induction and anaesthesia maintenance were implemented, with the use of required medications (midazolam, propofol, isoflurane and fentanyl) in doses adjusted for body mass. The left internal mammary artery was used as one of the grafts in all patients. Surgery was performed with medial sternotomy and sternum suturing was performed with metal sutures. Additionally, continuous double subcutaneous suture and continuous intracutaneous suture were used.

Each patient was asked to complete 1 day before surgery and 5-7 days after CABG the standard MacNew QoL questionnaire (concerning cardiac diseases), which is an established and reliable evaluation tool in patients with cardiac diseases [25]. The patients also completed the questionnaire at the beginning (about 6 weeks after surgery) and at the end of cardiac rehabilitation (about 10 weeks after surgery). Quality of life was evaluated according to the recommended point scale for the questionnaire, which indicates that the maximum number of points for each of 27 questions is 7 and the minimum is 1. Among 27 questions, 8 are characteristic only for emotional QoL, five for physical QoL and one for social QoL, and the remaining 13 questions were common for a few elements of QoL. In conclusion, emotional assessment was measured as an arithmetic mean of points achieved for 14 questions, while physical and social QoL are the mean of 13 questions. When no answer was given the question was omitted in measurement of the total score.

The results of each part of the questionnaire were analysed separately with calculation of the arithmetic mean for points in each part. The influence of the baseline variables (age, body mass index, perioperative risk, co-morbidities, severity of angina, smoking, haemoglobin concentration and haematocrit level) on the questionnaire score before and after surgery was assessed and QoL parameters before and after the procedure were compared. Additionally, the influence of the parameters of cardiopulmonary bypass (total bypass time, aortic cross-clamping time, the lowest haematocrit level during cardiopulmonary bypass, number of grafts) on postprocedural QoL was evaluated. The periprocedural risk was estimated using EuroSCORE (ES) and logistic EuroSCORE algorithm (LES) [26].

Statistical analysis

Statistical analysis was performed using the Statistica 8 software. Continuous variables are expressed as the arithmetic means with standard deviation (normally distributed variables) or as medians with interquartile range (not normally distributed). Data were tested for normality with Shapiro-Wilk W test. Categorical variables are presented as relative values. Correlations between variables were assessed with Pearson's correlation coefficient or Spearman's rank correlation coefficient. Differences between groups for continuous variables were evaluated with t-test for independent or paired samples and with Mann-Whitney U or Wilcoxon test. For categorical variables chi-square or Fisher's exact test was used. A p value < 0.05 was considered significant.

Results

Periprocedural observation

The studied population included 50 males, mean age 54.4 ± 5.6 years. Detailed characteristics of the population, including periprocedural data, are presented in Table I. The periprocedural risk for the studied population was low, both estimated by EuroSCORE algorithm (Me = 1 point) as well

Table I. Demographic, clinical and perioperative data

Variable		
Age [years]		54.4 ± 5.6
BMI [kg/m ²]		27.7 (25.4; 30.8)
ES [points]		1 (0; 1)
LES [%]		1.15 (0.88; 1.33)
Diabetes, n/n (%)		30/50 (60)
Hypertension, n/n (%)		38/50 (76)
Previous myocardial infarction, n/n (%)		18/50 (36)
Smoking, n/n (%)		38/50 (76)
CCS class, n/n, (%)	I	30/50 (60)
	II	20/50 (40)
	III	0
	IV	0
LVEF [%]		52.8 ± 7.2
CBPT [min]		70.4 ± 25.3
CCT [min]		42.1 ± 14.7
Number of grafts, n		3 (1; 4)
Hospital stay [days]		9 (8; 11)

Continuous variables are expressed as arithmetic mean with standard deviation (normally distributed variables) or for not-normally distributed variables as medians with interquartile range (in brackets) Abbreviations: ES – periprocedural risk according to EuroSCORE algorithm, LES – periprocedural risk according to logistic EuroSCORE algorithm, LVEF – left ventricular ejection fraction, BMI – body mass index, CCS – severity of angina according to the Canadian Cardiac Society

as by LES (Me = 1.15%). After surgery the mean values of haemoglobin concentration, haematocrit and red blood cell count were significantly lower (8.6 ± 0.7 vs. 6.4 ± 0.6 mmol/l; 43.0 ± 3.4 vs. $31.0 \pm 3.3\%$ and 4.7 ± 0.4 vs. 3.4 ± 0.4 mln/mm³, respectively before and after surgery). However, platelet count was significantly higher when compared to values before the procedure (before 182.0 ± 36.1 vs. 229.0 ± 96.0 thousand/mm³ after) ($p < 0.01$).

In no patient was an intra-aortic balloon pump used in the periprocedural period. During hospitalisation there was no cardiac arrest, postoperative respiratory failure requiring prolonged ventilation, periprocedural myocardial ischaemia fulfilling myocardial infarction criteria, postprocedural renal failure or excessive thorax drainage requiring thorax revision. In 6 (12%) patients atrial fibrillation occurred after surgery; restoration of sinus rhythm was performed using pharmacological cardioversion.

The baseline value of the emotional component of QoL was 4.97 ± 0.96 points, physical 4.49 ± 1.1 points, and social 4.68 ± 1.0 points. Postprocedural QoL was decreased when compared with the QoL before surgery, and its components were as follows: emotional component 4.66 ± 1.0 points, physical component 4.2 ± 1.2 points and social 4.47 ± 1.1 points. A statistically significant decline was demonstrated for the physical component ($p = 0.02$) and emotional one ($p = 0.03$). There was a moderately strong correlation between each component of QoL and the correlation coefficient ranged from 0.36 to 0.62 (Table II).

Analysis of the association between pre- and postprocedural QoL and selected continuous variables is presented in Table III. There was a significant positive correlation between patients' age as well as left ventricular ejection fraction (LVEF) and preprocedural physical and social QoL. On the other hand, postprocedural physical QoL showed a negative correlation with total cardiopulmonary bypass and with aortic cross clamping time. Moreover, negative correlations (although not statistically significant in some cases) between parameters of QoL and severity of angina ($R = -0.33$ ÷ -0.42), total postoperative drainage amount ($r = -0.11$ ÷ -0.34) and number of coronary grafts ($R = -0.35$ ÷ -0.42) were noted. Analysis of the influence of categorical variables on QoL parameters revealed a significantly decreased preprocedural physical component of QoL only in males with a history of myocardial infarction, when compared to patients without previous myocardial infarction (4.49 ± 1.1 vs. 5.24 ± 0.9 points, respectively, $p < 0.05$).

Table II. Correlation between quality of life before surgery and in the follow-up

Quality of life component		Before surgery		
		emotional	physical	social
After surgery	emotional	0.62*	0.39*	0.37*
	physical	0.36*	0.52*	0.38*
	social	0.48*	0.61*	0.53*
Before rehabilitation	emotional	0.63*	0.52*	0.52*
	physical	0.44*	0.78*	0.69*
	social	0.42*	0.73*	0.69*
After rehabilitation	emotional	0.34	0.20	0.34
	physical	0.40*	0.56*	0.55*
	social	0.46*	0.54*	0.61*

Data are presented as Pearson's correlation coefficients, * $p < 0.05$

Observation during rehabilitation period

From 50 patients qualified for rehabilitation, 30 patients (60%) attended the programme. Among them 22 patients completed the whole rehabilitation programme (44% of the primary recruited patients). At admission emotional QoL was 5.29 ± 0.92 points, physical 4.66 ± 1.1 points, and social 4.69 ± 1.2 points. After rehabilitation QoL was significantly better for all components (emotional 5.96 ± 0.9 points, physical 5.42 ± 1.2 and social 5.65 ± 1.1 points). There was significant improvement in all components of QoL when values before and after rehabilitation were compared (emotional: $p = 0.01$, physical: $p = 0.02$ and social $p = 0.01$). Values of each component of QoL before and after rehabilitation had a significant positive correlation (emotional $r = 0.75$, physical $r = 0.83$ and social $r = 0.75$). Slightly lower values of correlation coefficients were observed for the correlation between QoL before surgery and QoL after rehabilitation ($r = 0.2 \div 0.61$) (Table II). The QoL during rehabilitation showed a strong correlation with baseline periprocedural risk (according to ES and LES).

A significant correlation was also observed for individual components of QoL: LVEF, blood count parameters, baseline angina severity (according to CCS), extent of surgery (cardiopulmonary bypass time, aortic cross clamping time, drainage) and patients' age (Table IV).

Discussion

The aim of this study was to assess QoL in the preoperative period and during the rehabilitation programme in young professionally active males, with no significant co-morbidities, who underwent elective CABG with cardiopulmonary bypass. The current analysis is a part of the project which is aimed to analyse QoL in this selected group of patients shortly after surgery (repeated evaluation will be performed after return to social and professional activity, i.e. 6-8 months after CABG).

The issue of QoL in young males with low periprocedural risk undergoing elective CABG is rarely discussed in the literature. Limited attention has been paid to the assessment of QoL in individuals who due to the nature of symptoms of CAD have limited possibilities of professional development. However, in the short term after the procedure and after adequate rehabilitation, they return successfully to full social life and professional activity. Attention is focused mainly on QoL in the oldest patients with severe co-morbidities [6, 14-20].

It has been demonstrated that the benefit of CABG in improvement of QoL is undoubted [3, 4, 7, 11, 15, 23, 27, 28], also when compared to pharmacotherapy or coronary angioplasty [29]. The result is not significantly impaired by the use of cardiopulmonary bypass [2-4], although this issue still remains controversial [30, 31], mainly due to

Table III. Correlation between perioperative quality of life and selected variables

Variable	Quality of life before surgery			Quality of life after surgery		
	emotional	physical	social	emotional	physical	social
Age	-0.12	0.45	0.37	-0.06	0.17	0.11
LVEF	-0.03	0.49	0.48	0.16	0.18	0.23
ES*	-0.04	0.10	-0.01	-0.19	-0.19	-0.25
LES	-0.01	-0.23	-0.39	-0.12	-0.11	-0.25
BMI	-0.29	0.25	-0.13	-0.15	0.07	-0.06
CCS class	-0.21	-0.13	-0.29	-0.33	-0.42	-0.34
CPBT	-	-	-	-0.29	-0.40	-0.30
CCT	-	-	-	-0.09	-0.36	-0.23
Hct min*	-	-	-	-0.12	-0.20	-0.02
Hct '0'	-	-	-	0.29	0.14	0.07
Hgb '0'	-	-	-	0.11	-0.07	-0.08
Hct '1'	-	-	-	0.22	0.03	0.19
Hgb '1'	-	-	-	0.20	0.04	0.23
Total drainage amount	-	-	-	-0.34	-0.11	-0.16
Length of hospital stay*	-	-	-	-0.23	0.01	0.06
Number of grafts*	-	-	-	-0.35	-0.42	-0.41

Abbreviations: ES – periprocedural risk according to EuroSCORE algorithm, LES – periprocedural risk according to logistic EuroSCORE algorithm, LVEF – left ventricular ejection fraction, BMI – body mass index, CCS – severity of angina according to Canadian Cardiac Society, CPBT – cardio pulmonary bypass time, CCT – aorta cross clamping time, Hgb – haemoglobin, Hct – hematocrite
Data are presented as Pearson's correlation coefficients, except for variables marked with *, which are presented as Spearman's rank correlation coefficient. Statistically significant correlations are bolded

Table IV. Correlation between quality of life during rehabilitation and selected variables

Variable	Quality of life before surgery			Quality of life after surgery		
	emotional	physical	social	emotional	physical	social
Age	-0.54	-0.13	-0.06	-0.83	-0.41	-0.48
LVEF	0.26	0.42	0.47	-0.05	0.30	0.10
ES*	-0.74	-0.56	-0.47	-0.88	-0.88	-0.86
LES	-0.31	-0.26	-0.32	-0.21	-0.31	-0.31
BMI	-0.21	0.18	-0.11	-0.11	0.03	-0.11
CCS class*	0.32	0.32	0.38	0.55	0.34	0.58
CPBT	-0.45	-0.34	-0.31	-0.01	-0.22	-0.10
CCT	-0.29	-0.49	0.41	-0.01	-0.28	-0.20
Hct min*	-0.06	-0.01	-0.06	0.04	-0.14	-0.19
Hct '0'	0.38	0.02	0.10	0.43	0.04	0.10
Hgb '0'	0.24	-0.06	0.02	0.37	-0.11	0.01
Hct '1'	0.35	0.05	0.08	0.45	0.24	0.05
Hgb '1'	0.24	0.04	0.04	0.34	0.04	-0.03
Total drainage amount	0.01	0.42	0.33	0.18	0.09	0.08
Length of hospital stay*	0.21	0.23	0.37	-0.01	0.31	0.37
Number of grafts*	-0.23	-0.11	-0.11	-0.11	-0.10	-0.0

Abbreviations: as in Table III

the documented negative impact of anaesthesia and cardiopulmonary bypass on total cognitive function and the risk of neurological complications [32-35]. Absolute improvement of QoL in patients with high risk of surgery seems to be larger when compared to patients with fewer co-morbidities [7, 12, 24, 36]. This is mainly due to the fact that high risk patients have extremely low QoL before the procedure, and the reduction of angina symptoms is of greater benefit than in individuals with lower risk; the value of postprocedural QoL in both groups is comparable. Interestingly, the occurrence of postprocedural complications in the latter group of patients is not often reflected in significant impairment of postprocedural QoL [21, 37]. However, what is of greatest importance, the majority of patients in the cited studies were older individuals, who were not professionally active. Therefore, comparing these data with our study is difficult.

The issue when postprocedural QoL assessment is performed, is imported. It is obvious that improvement of QoL will be quite low in the short period after the procedure, the highest several months or years after surgery and thereafter a continuous decline will be observed, especially in older individuals [6, 10, 28, 38]. In younger patients attention should be directed to QoL assessment in the short period after the procedure, which should be reflected in better recovery and earlier return to full life activity [39]. It should also be stressed that periprocedural QoL might be a good predictor of occurrence of complications, including death, in the long-term follow-up [38, 40-42]. In the current study, it was

demonstrated that QoL of the studied population assessed immediately before hospital discharge was inferior to that before the surgery, especially in the physical and emotional component. The QoL during rehabilitation was significantly improved with the aim of achieving higher values than observed before CABG.

We demonstrated that several factors correlated with QoL during the short-term follow-up: age (positive correlation before the surgery and negative one in the follow-up), blood count parameters (positive correlation) and LVEF (negative correlation). The QoL was impaired in patients with a history of myocardial infarction. Additionally, the severity of angina symptoms was important in the deterioration of postprocedural QoL. What is more important, the extent of the procedure measured by total cardiopulmonary bypass time, aortic cross clamping time, amount of total drainage and the number of coronary grafts had a negative impact on QoL, although not all associations were statistically significant. Taking into consideration arguments mentioned in the discussion it is hard to compare the results of the current study with data in the literature. However, there are studies with similar results. These studies showed a decrease of QoL in the short term after surgery [28], negative influence of previous myocardial infarction on QoL after CABG in the prospective observation [9], or correlation between LVEF and preprocedural QoL [5]. Although many studies indicate that diabetes can influence postprocedural QoL [3, 43], we have not observed such an association in the current study. It can be hypothesised that the reason

is a too short follow-up period. Nevertheless, this should be verified in further studies. It is worth noting that the study demonstrated impairment of physical comfort immediately after surgery. We believe that the main reason is pain associated with the extent of surgery, which seems to be supported by the negative correlation of QoL with cardiopulmonary bypass duration, number of bypassed vessels and the total postoperative drainage. Moreover, it may be associated with early mobilisation and the wound healing process. Adequate administration of analgesics can lead to successful limitation of this disadvantage during the next few weeks [27, 28].

Conclusions

1. Postoperative QoL in young, professionally active patients with no significant co-morbidities undergoing CABG with cardiopulmonary bypass assessed immediately before discharge is lower when compared to the value before surgery. However, it shows continuous improvement over the next few weeks, especially after a cardiac rehabilitation programme.
2. Preprocedural QoL shows a positive correlation with patients' age and LVEF. On the other hand, there is a negative influence of a history of myocardial infarction on QoL.
3. Age, preprocedural risk, baseline severity of angina symptoms and extent of the procedure have a negative impact on QoL during the short-term follow-up after surgery.

References

1. Koch CG, Khandwala F, Blackstone EH. Health-related quality of life after cardiac surgery. *Semin Cardiothorac Vasc Anesth* 2008; 12: 203-17.
2. Tully PJ, Baker RA, Kneebone AC, et al. Neuropsychologic and quality-of-life outcomes after coronary artery bypass surgery with and without cardiopulmonary bypass: a prospective randomized trial. *J Cardiothorac Vasc Anesth* 2008; 22: 515-21.
3. Kapetanakis EI, Stamou SC, Petro KR, et al. Comparison of the quality of life after conventional versus off-pump coronary artery bypass surgery. *J Card Surg* 2008; 23: 120-5.
4. Motallebzadeh R, Bland JM, Markus HS, et al. Health-related quality of life outcome after on-pump versus off-pump coronary artery bypass graft surgery: a prospective randomized study. *Ann Thorac Surg* 2006; 82: 615-9.
5. Koch CG, Li L, Shishehbor M, Nissen S, et al. Socioeconomic status and comorbidity as predictors of preoperative quality of life in cardiac surgery. *J Thorac Cardiovasc Surg* 2008; 136: 665-72.
6. Jokinen JJ, Hippeläinen MJ, Hänninen T, et al. Prospective assessment of quality of life of octogenarians after cardiac surgery: factors predicting long-term outcome. *Interact Cardiovasc Thorac Surg* 2008; 7: 813-8.
7. Colak Z, Segotic I, Uzun S, et al. Health related quality of life following cardiac surgery – correlation with EuroSCORE. *Eur J Cardiothorac Surg* 2008; 33: 72-6.
8. Järvinen O, Julkunen J, Saarinen T, et al. Effect of diabetes on outcome and changes in quality of life after coronary artery bypass grafting. *Ann Thorac Surg* 2005; 79: 819-24.
9. Järvinen O, Julkunen J, Saarinen T, et al. Perioperative myocardial infarction has negative impact on health-related quality of life following coronary artery bypass graft surgery. *Eur J Cardiothorac Surg* 2004; 26: 621-7.
10. Yun KL, Sintek CF, Fletcher AD, et al. Time related quality of life after elective cardiac operation. *Ann Thorac Surg* 1999; 68: 1314-20.
11. Gjeilo KH, Wahba A, Klepstad P, et al. The role of sex in health-related quality of life after cardiac surgery: a prospective study. *Eur J Cardiovasc Prev Rehabil* 2008; 15: 448-52.
12. Balestroni G, Omarini G, Omarini P, et al. EuroQoL-5D FOR quality of life assessment in cardiac rehabilitation. *G Ital Med Lav Ergon* 2007; 29 (3 Suppl B): B56-62.
13. King KM. Gender and short-term recovery from cardiac surgery. *Nurs Res* 2000; 49: 29-36.
14. Ullery BW, Peterson JC, Milla F, et al. Cardiac surgery in select nonagenarians: should we or shouldn't we? *Ann Thorac Surg* 2008; 85: 854-60.
15. Huber CH, Goeber V, Berdat P, et al. Benefits of cardiac surgery in octogenarians—a postoperative quality of life assessment. *Eur J Cardiothorac Surg* 2007; 31: 1099-105.
16. Aydin S, Yavuz T, Duver H, et al. Quality of life in the elderly after coronary bypass surgery. *Int Heart J* 2006; 47: 59-65.
17. Lapiński T, Bień B, Wilmańska J. Health-related quality of life in the elderly after coronary artery bypass grafting. *Przegl Lek* 2004; 61: 1351-5.
18. Sjögren J, Thulin LL. Quality of life in the very elderly after cardiac surgery: a comparison of SF-36 between long-term survivors and an age-matched population. *Gerontology* 2004; 50: 407-10.
19. Stazka J, Janiszewski W. Results of coronary arteries bypass grafting in patients over 70 years old. *Ann Univ Mariae Curie Skłodowska Med* 2002; 57: 381-6.
20. Fruitman DS, MacDougall CE, Ross DB. Cardiac surgery in octogenarians: can elderly patients benefit? Quality of life after cardiac surgery. *Ann Thorac Surg* 1999; 68: 2129-35.
21. Martin LM, Halpin LS, Barnett SD, et al. The association between early outcome, health-related quality of life, and survival following elective open-heart surgery. *J Cardiovasc Nurs* 2008; 23: 432-42.
22. Järvinen O, Julkunen J, Tarkka MR. Impact of obesity on outcome and changes in quality of life after coronary artery bypass grafting. *World J Surg* 2007; 31: 318-25.
23. Myles PS, Viira D, Hunt JO. Quality of life at three years after cardiac surgery: relationship with preoperative status and quality of recovery. *Anaesth Intensive Care* 2006; 34: 176-83.
24. Rumsfeld JS, Magid DJ, O'Brien M, et al. Changes in health-related quality of life following coronary artery bypass graft surgery. *Ann Thorac Surg* 2001; 72: 2026-32.
25. Höfer S, Lim L, Guyatt G, et al. The MacNew Heart Disease health-related quality of life instrument: a summary. *Health Qual Life Outcomes* 2004; 2: 3.
26. Ocena ryzyka operacyjnego według algorytmu EuroSCORE i logistic EuroSCORE – kalkulator on-line. <http://www.euroscore.org/calc.html>
27. Ballan A, Lee G. A comparative study of patient perceived quality of life pre and post coronary artery bypass graft surgery. *Aust J Adv Nurs* 2007; 24: 24-8.
28. Elliott D, Lazarus R, Leeder SR. Health outcomes of patients undergoing cardiac surgery: repeated measures using Short Form-36 and 15 Dimensions of Quality of Life questionnaire. *Heart Lung* 2006; 35: 245-51.

29. Norris CM, Saunders LD, Ghali WA, et al. Health-related quality of life outcomes of patients with coronary artery disease treated with cardiac surgery, percutaneous coronary intervention or medical management. *Can J Cardiol* 2004; 20: 1259-66.
30. Schmitz C, Weinreich S, Schneider R, et al. Off-Pump versus on-pump coronary artery bypass: can OPCAB reduce neurologic injury? *Heart Surg Forum* 2003; 6: 127-30.
31. Deuse T, Detter C, Samuel V, et al. Early and midterm results after coronary artery bypass grafting with and without cardiopulmonary bypass: which patient population benefits the most? *Heart Surg Forum* 2003; 6: 77-83.
32. Grogan K, Stearns J, Hogue CW. Brain protection in cardiac surgery. *Anesthesiol Clin* 2008; 26: 521-38.
33. Hogue CW, Gottesman RF, Stearns J. Mechanisms of cerebral injury from cardiac surgery. *Crit Care Clin* 2008; 24: 83-98.
34. Smith PK. Predicting and preventing adverse neurologic outcomes with cardiac surgery. *J Card Surg* 2006; 21 (Suppl. 1): S15-9.
35. Gao L, Taha R, Gauvin D, et al. Postoperative cognitive dysfunction after cardiac surgery. *Chest* 2005; 128: 3664-70.
36. Noyez L, Markou AL, van Breugel FC. Quality of life one year after myocardial revascularization. Is preoperative quality of life important? *Interact Cardiovasc Thorac Surg* 2006; 5: 115-20.
37. Jideus L, Liss A, St?hle E. Patients with sternal wound infection after cardiac surgery do not improve their quality of life. *Scand Cardiovasc J* 2008; 23: 1-7.
38. Myles PS, Hunt JO, Fletcher H, et al. Relation between quality of recovery in hospital and quality of life at 3 months after cardiac surgery. *Anesthesiology* 2001; 95: 862-7.
39. Speziale G, Bilotta F, Ruvolo G, et al. Return to work and quality of life measurement in coronary artery bypass grafting. *Eur J Cardiothorac Surg* 1996; 10: 852-8.
40. Koch CG, Li L, Lauer M, et al. Effect of functional health-related quality of life on long-term survival after cardiac surgery. *Circulation* 2007; 115: 692-9.
41. Ho PM, Masoudi FA, Peterson PN, et al. Health-related quality of life predicts mortality in older but not younger patients following cardiac surgery. *Am J Geriatr Cardiol* 2005; 14: 176-82.
42. Rumsfeld JS, MaWhinney S, McCarthy M Jr, et al. Health-related quality of life as a predictor of mortality following coronary artery bypass graft surgery. Participants of the Department of Veterans Affairs Cooperative Study Group on Processes, Structures, and Outcomes of Care in Cardiac Surgery. *JAMA* 1999; 281: 1298-303.
43. Nötzold A, Michel K, Khattab AA, et al. Diabetes mellitus increases adverse neurocognitive outcome after coronary artery bypass grafting surgery. *Thorac Cardiovasc Surg* 2006; 54: 307-12.

Jakość życia młodych, aktywnych zawodowo mężczyzn poddawanych pomostowaniu tętnic wieńcowych z użyciem krążenia pozaustrojowego – analiza krótkookresowa

Łukasz J. Krzych¹, Anna Woźnica¹, Adam Pawlak¹, Janusz Skarysz¹, Zbigniew Eysymontt²,
Beata Chromańska-Matera², Irena Krupka-Matuszczyk¹, Andrzej Bochenek¹, Marek Cisowski¹

¹ Śląski Uniwersytet Medyczny, Katowice

² Śląskie Centrum Rehabilitacji, Ustroń

Streszczenie

Wstęp: Jakość życia (QoL) w okresie okołoperacyjnym u chorych poddawanych zabiegom kardiochirurgicznym jest coraz szerzej stosowanym parametrem oceny skuteczności leczenia. Niewiele miejsca poświęcono do tej pory analizie QoL u aktywnych zawodowo, młodych mężczyzn, którzy w krótkim okresie po operacji wracają do pracy zawodowej.

Cel: Ocena QoL w okresie okołoperacyjnym (przed operacją i przed wypisem ze szpitala) oraz w okresie rehabilitacji (przed i po) u młodych mężczyzn z niskim ryzykiem operacyjnym, poddawanych pomostowaniu wieńcowemu z użyciem krążenia pozaustrojowego (on-CABG).

Metody: Do udziału w projekcie zaproszono 120 kolejnych mężczyzn w wieku poniżej 65 lat zakwalifikowanych do CABG w trybie planowym, którzy przed zabiegiem byli aktywni zawodowo. Po uwzględnieniu kryteriów wyłączenia (brak zgody, wysokie ryzyko okołoperacyjne, obecność istotnych chorób współistniejących oraz brak możliwości samodzielnego wypełnienia kwestionariusza) do badania zakwalifikowano 50 mężczyzn, u których przeprowadzono on-CABG. Jakość życia określana była przedoperacyjnie i w 5.–7. dobie po operacji oraz przy rozpoczęciu i zakończeniu rehabilitacji, na podstawie kwestionariusza MacNew. Kwestionariusz składał się z 27 pytań ukierunkowanych na poznanie trzech aspektów QoL badanych: emocjonalnego, fizycznego i społecznego.

Wyniki: Ryzyko operacyjne wśród badanych było niskie (wg EuroSCORE Me = 1 pkt, wg *logistic* EuroSCORE Me = 1,15%). Jakość życia uległa pogorszeniu po operacji: emocjonalna z $4,97 \pm 0,96$ do $4,66 \pm 1,0$ pkt ($p = 0,03$), fizyczna z $4,49 \pm 1,1$ do $4,2 \pm 1,2$ pkt ($p = 0,02$) oraz społeczna z $4,68 \pm 1,0$ do $4,47 \pm 1,1$ pkt ($p = 0,1$). Czynniki dodatnio korelującymi z przedoperacyjną fizyczną i społeczną QoL były wiek badanych (odpowiednio: $r = 0,45$ i $r = 0,37$) oraz wartość frakcji wyrzutowej (odpowiednio: $r = 0,49$ i $r = 0,48$), natomiast negatywnie na fizyczną QoL przed operacją wpływało występowanie zawału serca w przeszłości ($p < 0,05$). Negatywny wpływ na fizyczną QoL po zabiegu miały całkowity czas krążenia pozaustrojowego oraz czas zakleszczenia aorty (odpowiednio: $r = -0,45$ i $r = -0,36$). Pogorszeniu QoL po operacji sprzyjały: stopień nasilenia dławicy ($R = -0,33 \div -0,42$), całkowity drenaż pooperacyjny ($r = -0,11 \div -0,34$) oraz liczba pomostów ($R = -0,35 \div -0,42$). W trakcie rehabilitacji QoL uległa poprawie, odpowiednio: emocjonalna z $5,29 \pm 0,92$ do $5,96 \pm 0,9$ pkt ($p = 0,01$), fizyczna z $4,66 \pm 1,1$ do $5,42 \pm 1,2$ pkt ($p < 0,01$) oraz społeczna z $4,69 \pm 1,2$ do $5,65 \pm 1,1$ pkt ($p < 0,01$). Jakość życia w okresie rehabilitacji była silnie skorelowana z wyjściowym ryzykiem operacyjnym (wg LES $r = -0,21 \div -0,31$; wg ES $R = -0,47 \div -0,89$), istotne w przypadku wybranych komponent były także: frakcja wyrzutowa lewej komory ($r = 0,26 \div 0,47$), wartości morfologiczne krwi ($r = 0,37 \div 0,43$), wyjściowe nasilenie dławicy wg CCS ($R = 0,31 \div 0,58$), rozległość operacji (czas krążenia i zakleszczenia aorty, drenaż) i wiek badanych ($r = -0,41 \div -0,83$).

Wnioski: Jakość życia w okresie okołoperacyjnym u młodych, aktywnych zawodowo, nieobciążonych istotnymi chorobami współistniejącymi mężczyzn poddawanych on-CABG, określana bezpośrednio przed wypisaniem ze szpitala jest gorsza w porównaniu z QoL sprzed zabiegu, natomiast ulega systematycznej poprawie w czasie kilkunastu tygodni, zwłaszcza po cyklu rehabilitacji kardiologicznej. Jakość życia oceniana przed operacją dodatnio koreluje z wiekiem badanych oraz frakcją wyrzutową lewej komory, natomiast negatywny wpływ na QoL ma występowanie zawału serca w przeszłości. Negatywny wpływ na QoL w obserwacji krótkookresowej po zabiegu mają: wiek, ryzyko przedoperacyjne, wyjściowe nasilenia dolegliwości dławicowych oraz rozległość zabiegu.

Słowa kluczowe: pomostowanie aortalno-wieńcowe, jakość życia, ryzyko operacyjne

Kardiologia Polska 2009; 67: 1078-1085

Adres do korespondencji:

dr n. med. Łukasz J. Krzych, Śląski Uniwersytet Medyczny, ul. Ziołowa 47, 40-635 Katowice, tel.: +48 32 359 86 11, +48 32 252 70 66,
faks: +48 32 252 80 10, e-mail: l.krzych@wp.pl

Praca wpłynęła: 20.02.2009. Zaakceptowana do druku: 01.07.2009.